

Project name:
Building N204A Window Replacement Project

Project reference:
60657336

From:
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Date:
May 24, 2021

To:
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CC:
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Memo

Subject: Section 106 Consultation on Building N204A Window Replacement Project, NASA Ames Research Center, Moffett Field, Santa Clara County, California

1. Introduction

The National Aeronautics and Space Administration (NASA) Ames Research Center (ARC) proposes the Building N204A Window Replacement Project (project or undertaking) at ARC, Moffett Field, Santa Clara County, California. As the lead federal agency, NASA is responsible for compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (54 United States Code [USC] 300101 et seq.), which requires federal agencies to take into account the effects of their activities and programs on historic properties, and its implementing regulations in 36 Code of Federal Regulations (C.F.R.) Part {§} 800. The purpose of this memorandum is to provide necessary information for compliance with Section 106, including a description of the undertaking and the Area of Potential Effects (APE), the methodology used to identify and evaluate historic properties within the APE, a description of the affected historic properties, and an assessment of potential effects resulting from the undertaking. The project involves the replacement of multiple windows in Building N204A due to very poor condition and the potential hazard of falling glass during a seismic event.

1.1 Project Location

Building N204A is located within the NASA Ames Research Park at ARC, Moffett Field, Santa Clara County, California (see Appendix A, Figures 1 and 2). The building is on the NASA Ames Campus and is connected to Building N206A, which is west of Building N206, the 12-ft. Pressure Wind Tunnel on the south side of King Street.

1.2 Project Personnel

This study was conducted by cultural resources professionals who meet the Secretary of the Interior's Professional Qualifications Standards (48 Federal Register 44738). Trina Meiser, M.A., Senior Architectural Historian, served as the Principal Investigator; Rob'yn Johnston, M.A., RPA, provided map figures; and Kirsten Johnson, M.A., served as the lead verifier of this document.

2. Description of the Undertaking

The project involves the replacement of windows in Building N204A, which is considered an undertaking per 36 C.F.R. § 800.3(a). The purpose of the undertaking is to improve seismic risk in Building N204A. The need for the undertaking is to improve facilities to full operational capability. The project would involve the replacement of nine existing windows on the west wall and the replacement or infill one window on the south wall (10 windows total). The existing windows are original wood-frame industrial windows in a three-row by four-column configuration of 3-pane awning sash. The replacement windows are aluminum-frame industrial windows with the same configuration and tempered glass panes. Some replacement panes would have black tempered glass to block light for interior usage requirements. Select project drawings are provided in Appendix B.

3. Area of Potential Effects

The APE is defined to address both direct and indirect impacts on historic properties. Project activities are limited to window replacement, which is unlikely to have indirect impacts on historic properties beyond the immediate vicinity of Building N204A. Exterior alterations are relatively minor due to the orientation and scale of the visible changes; therefore, the APE includes the project area (Building N204A) and Buildings N203, N204, N205, and N206A to address potential visual and/or atmospheric intrusions related to the exterior alterations (see Appendix A; Figure 3).

4. Identification of Historic Properties

Historic properties are defined as any district, site, building, structure, or object that is included in or is eligible for listing in the National Register of Historic Places (NRHP). The following sections address the methodology and efforts to identify historic properties in the APE. No ground disturbance is included in the project scope of work, and no potential effects on archaeological resources are anticipated.

4.1 Architectural Resources

The APE has been previously studied for cultural resources. Five buildings are in the APE: N203, N204, N204A, N205, and N206A. Each building was previously surveyed and evaluated for eligibility for listing in the NRHP. The current identification efforts are built on previous surveys, including:

- Architectural Resources Group, Inc., *Building Evaluations for N204, N205, N206, N207, N208, N209, N218, N222, and N223, NASA Ames Research Center, Mountain View, California*. (ARG 2001)
- Page & Turnbull, Inc. *NASA Ames Research Center, Moffett Field, California, Survey and Rehabilitation Recommendations*. (Page & Turnbull 2006)

Each building was previously recorded on Department of Parks and Recreation (DPR) 523 forms and is briefly described below. DPR 523 forms are included in Appendix C. AECOM revisited the buildings on May 20, 2021, to observe the existing conditions and determine if any alterations had occurred since the previous recording. No major alterations were observed.

Building N203

Built in 1942, Building N203 is a two-story Industrial /Moderne building with a rectangular plan, concrete foundation, exposed concrete walls, and a flat roof (Photograph 1). The exterior walls feature horizontal concrete bands. The façade (west elevation) has nine symmetrical bays with original steel-frame industrial windows in a three-row by four-column configuration of 3-pane awning sash, many with window screens. The main entrance is in the center bay with a cantilevered concrete cover and non-original glazed aluminum doors. Building N203 has had few exterior alterations. Building N203 was previously evaluated as an eligible resource through survey of

the Ames campus in 2005 (Page & Turnbull 2006). The previous evaluation found that Building N203 was not individually eligible for the NRHP but was significant as one of several research and support buildings built by the National Advisory Committee for Aeronautics (NACA) at Ames between 1940 and 1958 that expressed Industrial/Moderne architectural details. It was identified as a possible contributor to a historic district based on these architectural qualities (Page & Turnbull 2006).



Photograph 1. Building N203, west elevation, view facing east

Building N204

Built in 1952, Building N204 is a two-story Industrial/Moderne building with a rectangular plan, concrete foundation, exposed concrete walls, and a flat roof (Photograph 2). The exterior walls feature horizontal concrete bands. The façade (west elevation) has nine symmetrical bays with original steel-frame industrial windows in a three-row by four-column configuration of 3-pane awning sash in the first story. The second-story addition has concrete panel exterior walls and a row of ribbon windows with a cantilevered concrete awning. The main entrance is in the center bay, which features a two-story addition. The interior and the exterior of Building N204 are substantially altered. Building N204 was originally constructed as the Heat Transfer and Low Density Wind Tunnel facility, and once had an 8-inch, low-density, wind tunnel test section. By 1962, the building was renovated for the Space Technology department. Building N204 was previously evaluated as an eligible resource through survey of the Ames campus in 2005 (Page & Turnbull 2006). The previous evaluation found that Building N204 was not individually eligible for the NRHP, and due to loss of integrity, was not significant as one of several research and support buildings built by NACA at Ames between 1940 and 1958 that expressed Industrial/Moderne architectural details (Page & Turnbull 2006). It is not eligible for the NRHP.



Photograph 2. Building N204 (right), north and west elevations, view facing southeast

Building N204A

Built in 1955, Building N204A is a two-story Industrial Style/Moderne building with a rectangular plan, concrete foundation, exposed concrete walls, and a flat roof (Photographs 3 and 4). The exterior walls feature horizontal concrete bands. The façade (west elevation) has five symmetrical bays with original wood-frame industrial windows in a three-row by four-column configuration of 3-pane awning sash. One window opening in the west elevation has been partially infilled with concrete blocks, and one window opening in the west elevation and one window opening in the south elevation, both in the second story, contain replacement aluminum windows (similar to the proposed replacement windows for the project). Many windows contain mechanical penetrations. Entrances are utilitarian metal flush doors on the north and south sides of the building. An exterior steel stair with concrete treads is on the south side. Building N206A is attached on the east side of Building N204A. Originally known as the Ames Vertical Gun Range, Building N204A was built as an annex to Building N204. Building N204A was previously evaluated as an eligible resource through survey of the Ames campus in 2005 (Page & Turnbull 2006). The previous evaluation found that Building N204A was not individually eligible for the NRHP but was significant as one of several research and support buildings built by NACA at Ames between 1940 and 1958 that expressed Industrial/Moderne architectural details. It was identified as a possible contributor to a historic district based on these architectural qualities (Page & Turnbull 2006).



Photograph 3. Building N204A, west elevation, view facing east



Photograph 4. Building N204A, west and south elevations (second-story windows at the corner were replaced circa 2010), view facing northeast

Building N205

Built in 1957, Building N205 is a one-story utilitarian building with a concrete foundation, exposed concrete walls, and a flat roof (Photograph 5). The exterior walls are smooth concrete with a horizontal concrete band at the top of the building and a water table at the base and no fenestration. The entrance consists of metal flush doors.

Building N205 once was the pilot model of a 3.5-ft. Wind Tunnel and also the pilot nozzle building, then later became a support building for Building N206A, which also supported the 12-ft. Pressure Wind Tunnel. Building N205 was previously evaluated as not eligible for the NRHP (Page & Turnbull 2006). Building N205 is a support structure and is not eligible for the NRHP.



Photograph 5. Building N205, west elevation, view facing east

Building N206A

Building N206A is a two-story Industrial Style/Moderne building with a rectangular plan, concrete foundation, exposed concrete walls, and a flat roof (Photograph 6). The exterior walls feature horizontal concrete bands. The façade (north elevation) has five symmetrical bays with a combination of windows and metal louvered vent covers. Windows are wood-frame industrial windows in a three-row by four-column configuration of 3-pane awning sash. Entrances are utilitarian metal flush doors on the west and south sides of the building. Building N204A is attached on the southwest side of Building N206A. An addition is on the southeast corner. Building N206A is an annex to the 12-ft. Pressure Wind Tunnel (Building N206). This wind tunnel provides unique high-Reynolds number testing capabilities for the development of high-lift systems commercial transport and military aircraft, and for high angle-of-attach testing of maneuvering aircraft. An important aspect of this building is its relationship to Building N206. Built in 1946 as an auxiliary building for the 12-ft. Low Turbulence Wind Tunnel, Building N206A contained the air-handling equipment for the wind tunnel, including pumps, air coolers, dehumidifiers, and electric motors. In 1994, Buildings N206 and N206A were extensively altered, but exterior features of the building remained relatively unchanged. Building N206A was previously evaluated as an eligible resource through survey of the Ames campus in 2005 (Page & Turnbull 2006). The previous evaluation found that Building N206A was not individually eligible for the NRHP but was significant as one of several research and support buildings built by NACA at Ames between 1940 and 1958 that expressed Industrial/Moderne architectural details. It was identified as a possible contributor to a historic district based on these architectural qualities (Page & Turnbull 2006).



Photograph 6. Building N206A, north elevation, with Building N204A at right, view facing south

5. Affected Historic Properties

Buildings N203, N204A, and N206A exhibit some of the Industrial/Moderne architectural details that are characteristic of the Ames campus, including smooth and scored concrete exterior siding, rectilinear configurations, industrial windows, flat roofs, and horizontality. While not eligible for individual listing in the NRHP, these buildings were identified for their contextual value in a potential historic district (Page & Turnbull 2006). To date, no historic district has been identified and evaluated, and it is beyond the scope of this evaluation to assess a potential historic district. Therefore, for the purposes of this undertaking, Buildings N203, N204A, and N206A will be treated as potentially eligible contributors to an as-yet unidentified historic district within the Ames campus that would be unified by exterior Industrial/Moderne architectural features and potentially eligible for listing in the NRHP under Criterion C. Buildings N203, N204A, and N206A retain the exterior architectural features that may make them potential contributors to a historic district.

The buildings' contributing or character-defining features are Industrial/Moderne, including utilitarian, reinforced concrete walls; flat roofs; scored concrete and horizontality; symmetrical fenestration; and utility doors. Interior finishes are noncontributing features. The changes proposed to Building N204A would have minimal impacts on Buildings N203 and N206A or their character-defining features. Alterations to Building N204A would not compromise Building N203's or N206A's integrity of location, design, setting, materials, workmanship, feeling, or association, or the integrity other contributing properties in the potential district (see Photographs 6, 7, and 8). Therefore, the assessment of effects will focus on Building N204A.



Photograph 7. View of Building N204A adjacent to Building N204, view facing southeast



Photograph 8. Building N204A from DeFrance Avenue in background with Building N203 in foreground, view facing southeast

For the purposes of this undertaking, Building N204A will be considered an eligible resource, as a potential contributor to an as-yet unidentified historic district within Ames campus that is significant under Criterion C for its Industrial/Moderne architectural features. As identified in the 2005 survey (Page & Turnbull 2006), contributing features include:

“the concrete bands that articulate the first and second floors; the tripartite scoring at the concrete piers that align with the window mullions; the grouped, industrial style windows that form a consistent window plane; and the concrete canopies with rounded corners. The concrete banding that wraps around the buildings articulates a definite horizontality, a common language to Moderne and International style buildings. The buildings are expressed in concrete with a durable and solid nature, yet also portray an airy feel with the industrial ribbon windows.”

Character-defining features of the potential district exhibited in Building N204A include its rectilinear form, flat roof, industrial windows, concrete bands, and decorative scoring.

6. Assessment of Effects

Per 36 C.F.R. § 800.5(a)(1), an adverse effect results when an undertaking may alter, either directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the historic property's integrity. Several examples of adverse effects are listed in 36 C.F.R. 800.5(a)(2). The following assessment examines the undertaking for each of those examples, including an analysis of compliance with the Secretary of the Interior's Standards for Rehabilitation (Standards) (36 C.F.R. Part 68).

(i) Physical destruction of or damage to all or part of the property

The project would remove and replace existing windows. Overall, no physical destruction is planned as part of this project and any damage would be minimal and repaired.

(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's standards for the treatment of historic properties (36 C.F.R. part 68) and applicable guidelines

With the State Historic Preservation Officer's agreement, if a property is restored, rehabilitated, repaired, maintained, stabilized, remediated, or otherwise changed in accordance with the Standards, then it will not be considered an adverse effect. The following is an assessment of the undertaking for compliance with the Standards and guidelines (NPS 2017).

1. *A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces and spatial relationships.*

The project would have no change on the use of the building.

2. *The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.*

The project would not change the overall historic character of the potential historic property. The removal and replacement of existing wood-frame industrial windows with modern aluminum-frame industrial windows with the same configuration would not impair the building's ability to convey its potential significance. Although the change from wood-frame to aluminum-frame windows is not strictly an in-kind replacement, the wood-frame windows do not consist of particularly distinctive materials, and the appearance of the building would not change substantially. One window opening on the south side of the building in the first story behind an exterior steel stair may be infilled rather than replaced. This is an obscured opening and is not prominent or character-defining. No significant materials, spaces, or spatial relationships of the potential historic property would be modified as a result of this project.

3. *Each property will be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.*

Not applicable.

4. *Changes to a property that have acquired historic significance in their own right will be retained and preserved.*

Not applicable.

5. *Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.*

The removal and replacement of existing wood-frame industrial windows with modern aluminum-frame industrial windows with the same configuration would not remove distinctive materials, features, finishes, or construction techniques that especially warrant preservation. Although the change from wood-frame to aluminum-frame windows is not strictly an in-kind replacement, the wood-frame windows do not consist of particularly distinctive materials or represent significant craftsmanship.

6. *Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.*

The existing windows pose a risk in a seismic event and require replacement to continue scientific uses in Building N204A. The replacement aluminum-frame windows would match the original wood-frame windows in design, configuration, operability, and color (anodized color coating). Although the materials would not be the same, the appearance would be virtually the same. -

7. *Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.*

Not applicable.

8. *Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.*

Not applicable.

9. *New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.*

The replacement windows would be compatible in design and differentiated by materials.

10. *New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.*

Installation of the new windows would be permanent and irreversible but would not impair the essential form and integrity of Building N204A.

In summary, the project meets the Standards, as it proposes to replace Building N204A's industrial windows with similar industrial windows.

(iii) Removal of the property from its historic location

Not applicable.

(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance

Not applicable.

(v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features

Not applicable.

(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization

Not applicable.

(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance

Not applicable.

7. Summary of Findings

This study identified five buildings in the APE: Buildings N203, N204, N204A, N205, and N206A. Three buildings were previously evaluated as significant as potential contributors to an unidentified historic district unified by Industrial/Moderne architectural characteristics. The criteria of adverse effect were applied to potential historic properties in the APE. The proposed undertaking would directly alter Building N204A through the replacement of its industrial windows, which are a character-defining feature of the property. The replacement windows would be consistent with the original design and the project would adhere to the Standards. Additionally, exterior changes to Building N204A would have negligible visual effects on Buildings N203 and N206A and would not change any of their characteristics that make them potentially eligible for the NRHP as contributors to a historic district based on Industrial/Moderne architectural characteristics. Therefore, the proposed undertaking would result in No Adverse Effect on historic properties per 36 C.F.R. § 800.5(b).

8. References

Architectural Resources Group, Inc.

2001 *Building Evaluations for N204, N205, N206, N207, N208, N209, N218, N222, and N223, NASA Ames Research Center, Mountain View, California.*

NPS (National Park Service)

2017 (revised) *The Secretary of the Interior's Standards for the Treatment of Historic Properties and Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings.*

Page & Turnbull, Inc.

2006 *NASA Ames Research Center, Moffett Field, California, Survey and Rehabilitation Recommendations.*

Appendices

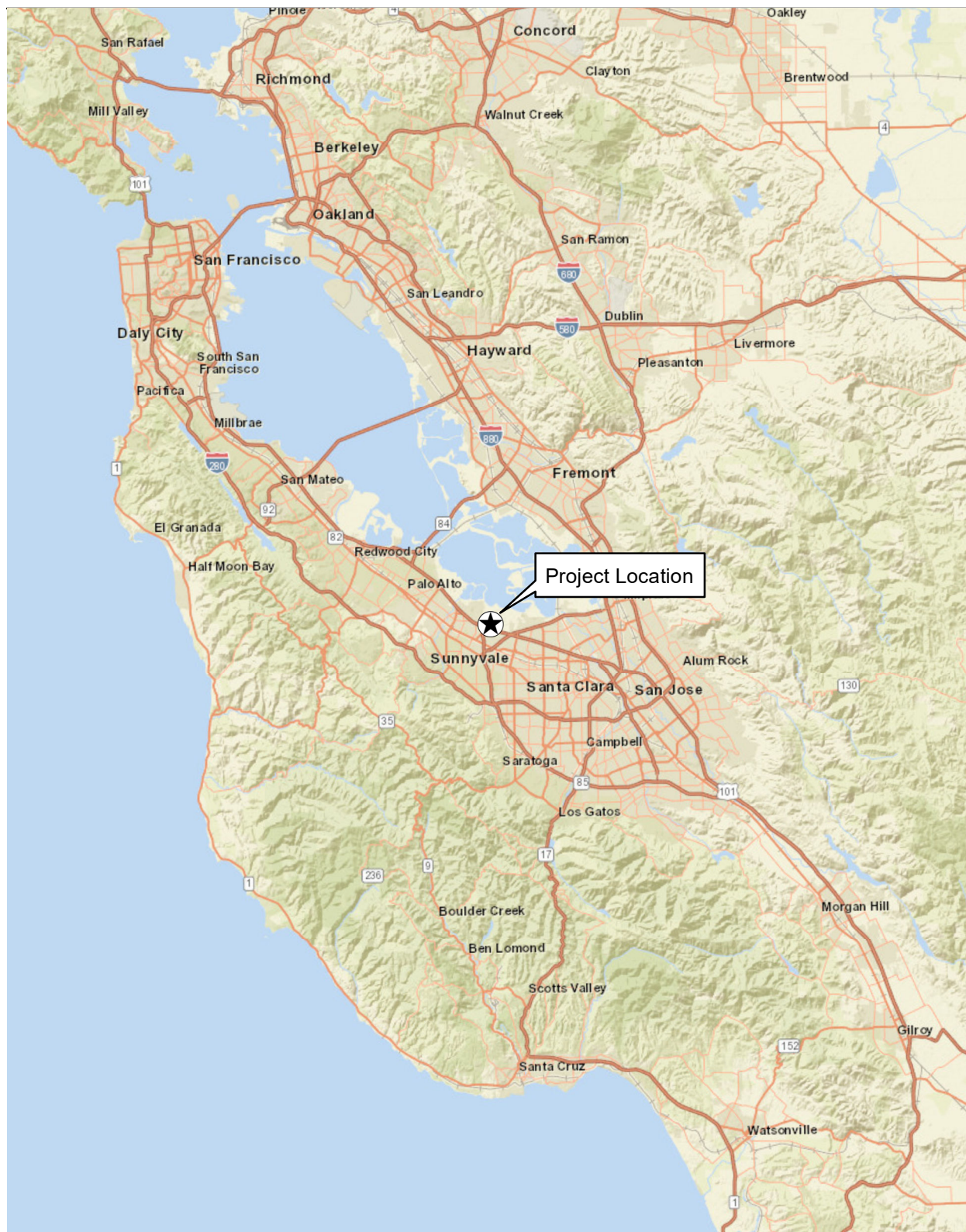
Appendix A: Figures 1-3 (Project Location, Project Vicinity, APE)

Appendix B: Project Drawings

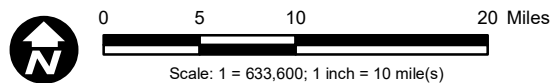
Appendix C: DPR 523 Forms

Appendix A

Figures 1-3 (Project Location, Project Vicinity, APE)

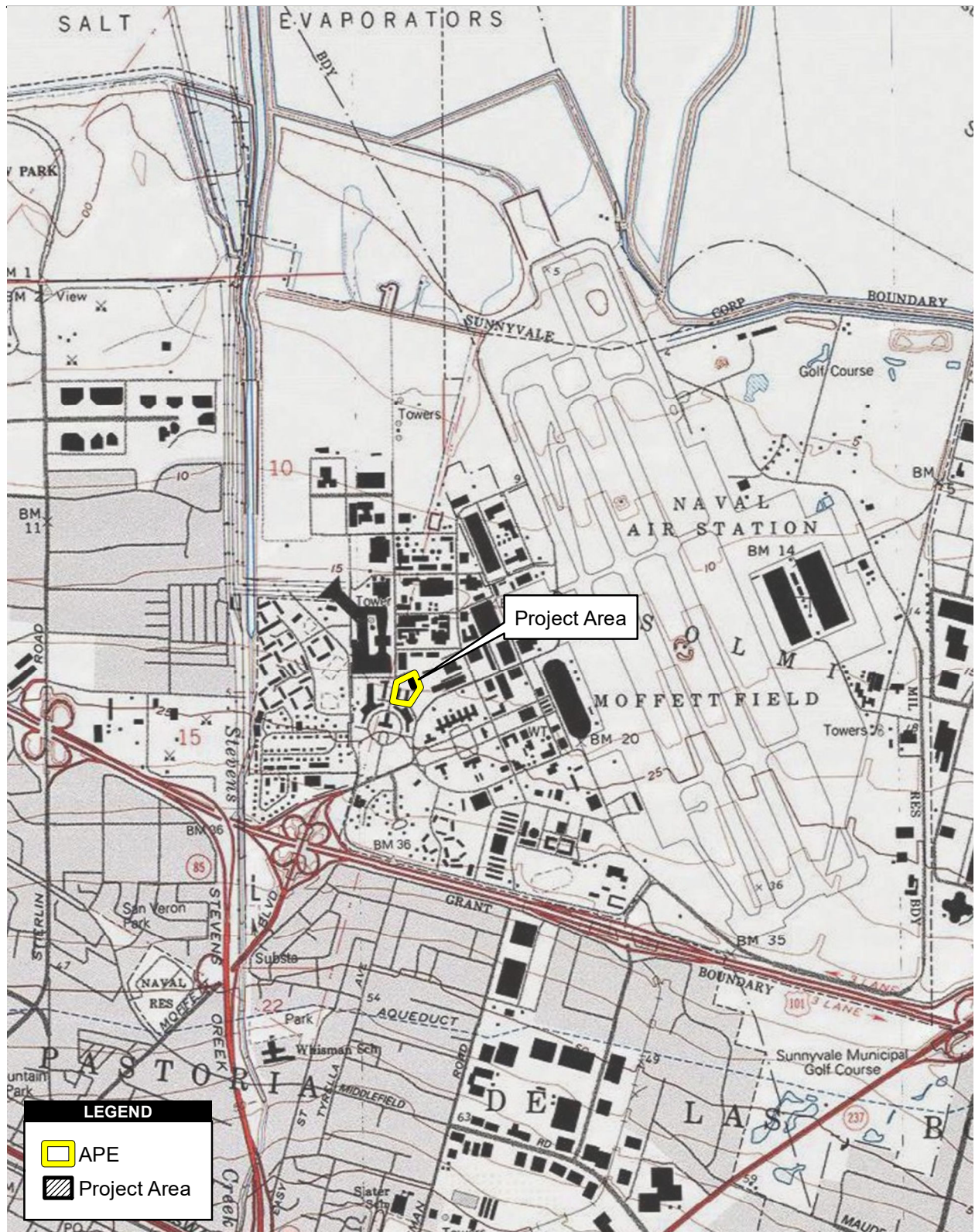


Source: ESRI, AECOM, NASA



Building N204A Window Replacement Project

Path: P:\NASA\900-CAD-GIS\mxd\Bldg N204A\BldgN204A Figure01 ProjectLocation.mxd, 5/24/2021, Robyn Johnston



Source: ESRI, AECOM, NASA, National Geographic Society; USGS 7.5' Topographic Quadrangle: Mountain View



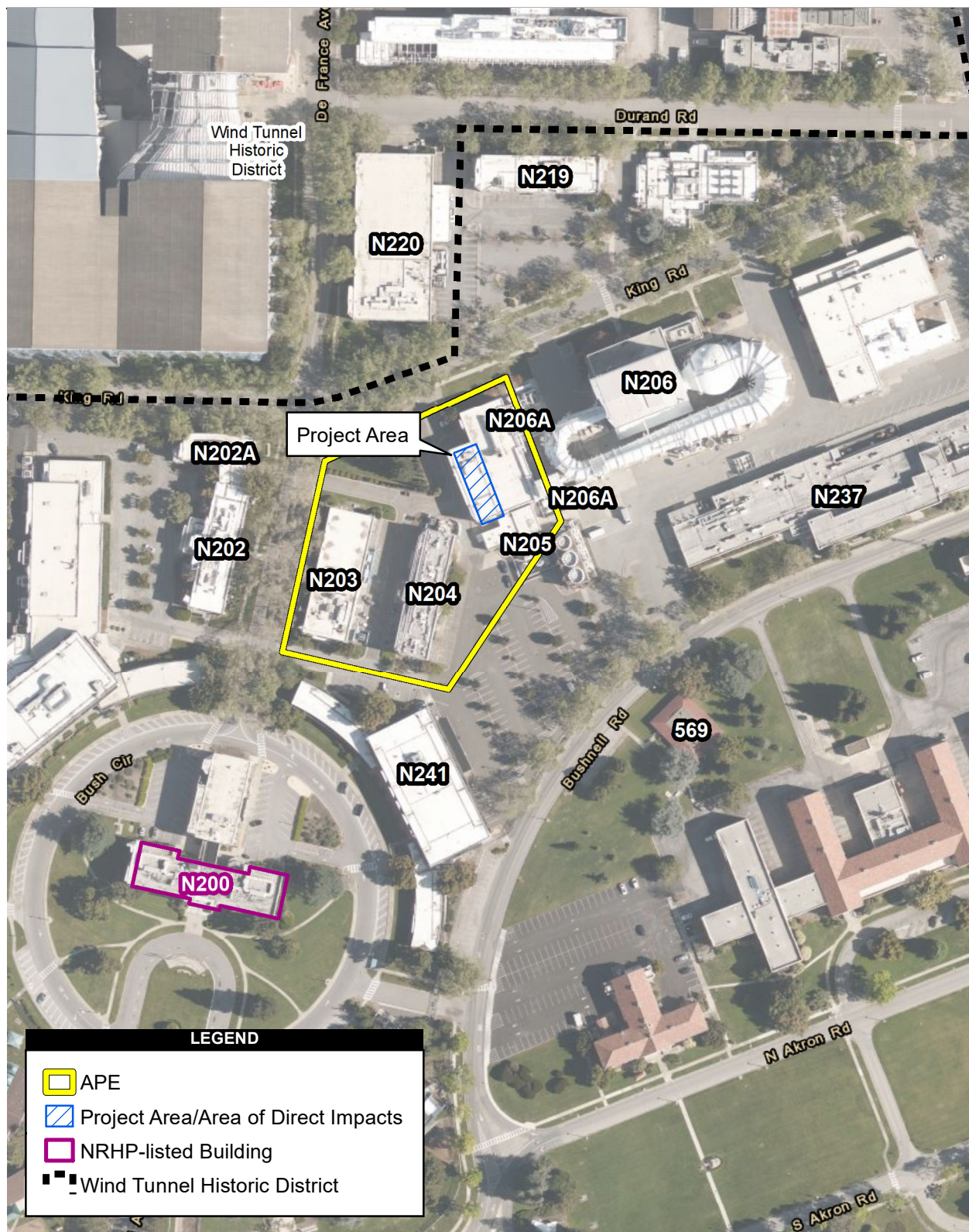
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Scale: 1 = 24,000; 1 inch = 2,000 feet

Figure 2
Project Vicinity Map

Building N204A Window Replacement Project

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Source: ESRI, AECOM, NASA

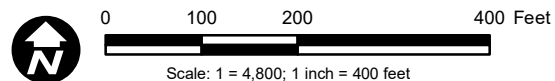


Figure 3
APE Map

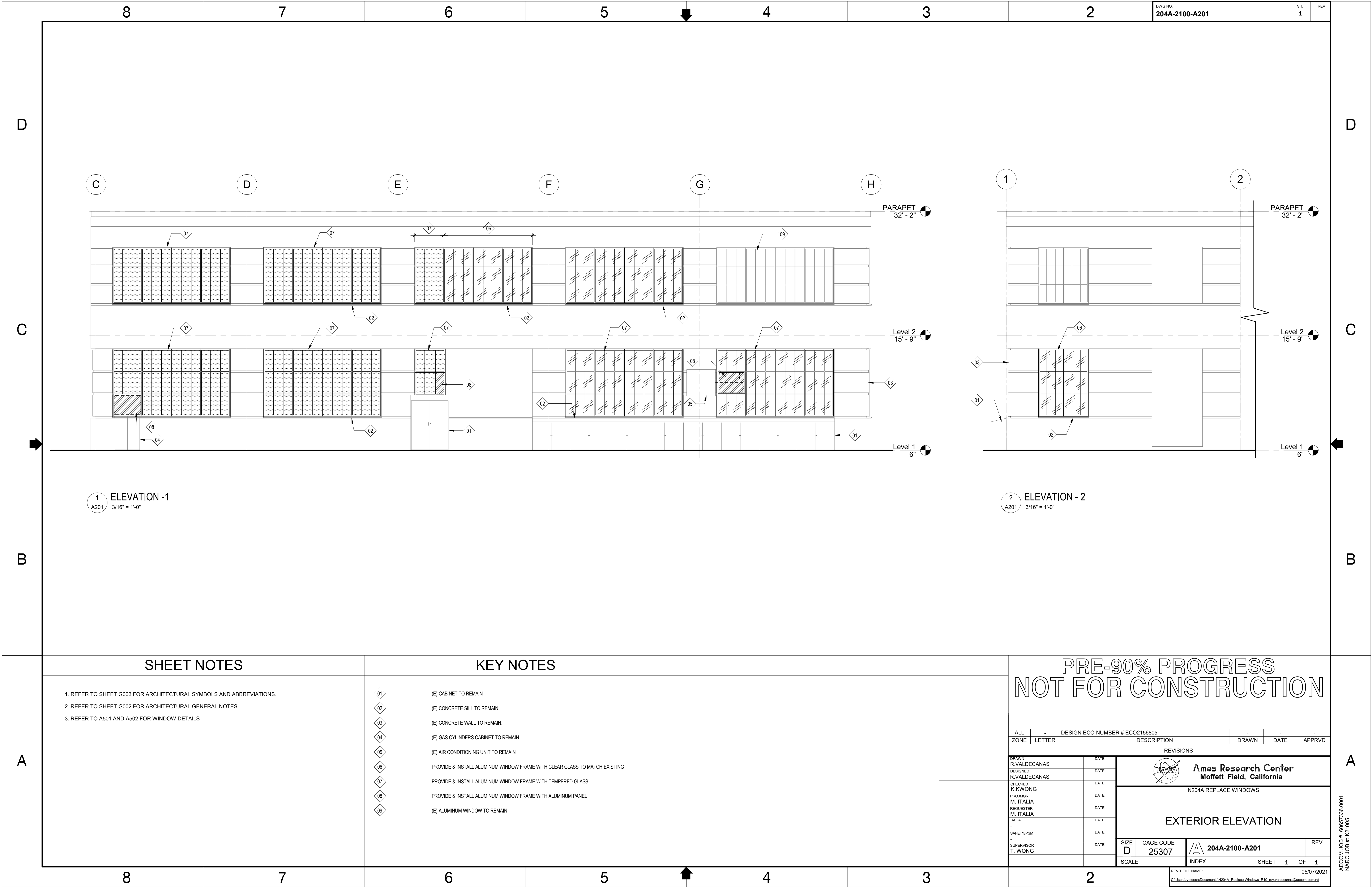
Building N204A Window Replacement Project

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Appendix B

Project Drawings

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Appendix C: DPR 523 Forms